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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Applicant(s): Michael L. Trompower

Serial No: 09/483,399

Filing Date: January 14, 2000

Examiner: Naghmeh Mehrpour

Art Unit: 2685

Title: IMPROVED 802.11 NETWORKS USING DYNAMIC POWER CONTROL FOR RF TRANSMISSION

Box AF
Assistant Commissioner for Patents
U.S. Patent and Trademark Office
Washington, D.C. 20231

APPEAL BRIEF

Dear Sir:

Applicant submits this brief in triplicate in connection with an appeal of the above-identified application. The Commissioner is authorized to charge $320.00 to Deposit Account No. 50-1063 for the fee associated with this brief.

I. Real Party in Interest (37 C.F.R. § 1.192(c)(1))

The real party in interest in the present appeal is TELXON CORPORATION, the assignee of the present application.

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II. Related Appeals and Interferences (37 C.F.R. § 1.192(c)(2))

Appellant, appellant's legal representatives, and/or the assignee of the present application are unaware of any appeals or interferences which will directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims (37 C.F.R. § 1.192(c)(3))

Claims 1-35 are pending in the application. The rejection of claims 1, 2, 4-21, and 23-35 is appealed.

IV. Status of Amendments (37 C.F.R. § 1.192(c)(4))

No claim amendments have been made subsequent to the final rejection of August 13, 2002.

V. Summary of Invention (37 C.F.R. § 1.192(c)(5))

The present invention relates to adjusting transmission power levels of different portions of a data packet (p. 3, ll. 14-15). Access points and mobile units complying with the IEEE 802.11 protocol have cell ranges that are different with respect to different portions of a packet transmitted from an access point to a mobile unit or another access point. This is due to different portions of a packet being transmitted at different data rates and having different modulations. (p. 8, ll. 4-10).

Fig. 5a of the present invention illustrates a block diagram representative of a hardwired access point 54a. The access point 54a includes a network adapter transceiver 92 and a radio frequency (RF) section 110, which are connected to an internal bus 94 included within the access point 54a. The access point 54a also includes a processor 98 for controlling and carrying out the operations of the access point (p. 10, ll. 23-29). The processor 98 controls an RF transmitter 114 included in the RF section 110, the RF transmitter also being connected to the bus 94. The processor 98 causes the RF transmitter 114 to modulate and transmit an RF signal, which, in turn, carries the information packet to the appropriate mobile communication unit 66 or wireless access point 54b (Fig. 5b). (p. 11, ll. 18-29).

A power control circuit 115 is disposed between an antenna 62 in the access point 54a

and the RF transmitter 114. The power control circuit 115 controls the transmission power of different portions of a data packet transmitted by transmitter 114. The processor 98 receives range information from the mobile communication unit *via* the receiver 112. The processor 98 then calculates the necessary transmission power values needed for transmission of different portions of a packet. The power values are loaded to the power circuit 115, which dynamically adjusts the transmission power according to the downloaded power values during the transmission of a packet. (p. 11, l. 29 - p. 12, l. 8).

The present invention also describes a wireless access point 54b, which also includes a power control circuit 115b for dynamically adjusting the transmission power of a packet based on the desired range of the transmission (p. 12, ll. 23-25).

VI. Statement of the Issues (37 C.F.R. § 1.192(c)(6))

A. Whether claims 1-2, 4-21, and 23-35 are patentable under 35 U.S.C. §103(a) as being obvious over Rom (U.S. Patent No. 5,450,616) in view of Fischer *et al.* (U.S. Patent No. 5,768,605).

VII. Grouping of Claims (37 C.F.R. § 1.192(c)(7))

For the purposes of this appeal only, the claims are grouped as follows:

Claims 1-2, 4-21, and 23-35 stand or fall together; and claims 3 and 22 stand or fall together.

VIII. Argument (37 C.F.R. § 1.192(c)(8))

A. Rejection of Claims 1-2, 4-21, and 23-35 Under 35 U.S.C. 103(a)

Claims 1-2, 4-21, and 23-35 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Rom (U.S. Patent No. 5,450,616) in view of Fischer *et al.* (U.S. Patent No. 5,768,605). A reversal of the rejection is respectfully requested for at least the following reasons.

i. The combination of Rom and Fischer et al. does not teach or suggest each and every limitation as set forth in the claims of the present invention.

Applicable Law

> To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) ***must teach or suggest all the claim limitations***. *See* MPEP §706.02(j). The ***teaching or suggestion to make the claimed combination*** and the reasonable expectation of success ***must both be found in the prior art and not based on applicant's disclosure***. *See In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added).

Neither Rom nor Fischer *et al.* teach or suggest ***transmitting a first portion of data at a first transmission and a second portion of the data at a second transmission***, as recited in independent claims 1, 19, 29, 32, and 35 of the subject application. As disclosed in the specification of the subject application, access points and mobile units complying with the IEEE 802.11 protocol have cell ranges that are different with respect to different portions of a packet transmitted from an access point to a mobile unit or another access point. This is due to different portions of a packet being transmitted at different data rates and having different modulations. (p. 8, ll. 4-10).

For example, the data packet includes: a Physical Layer Convergence Procedure (PLCP) preamble portion, which is transmitted at a data rate of 1 Mbps; a PLCP header portion, which is transmitted at a data rate of 1 Mbps for a long IEEE 802.11 header and at 2 Mbps for a short IEEE 802.11 header; and a Protocol Data Unit (PDU) portion, which can be transmitted at 1, 2, 5.5, or 11 Mbps. (p. 8, ll. 17-28). Further, the different portions of the data packet have different ranges when transmitting at a constant power. For example, the PLCP preamble portion transmitting at 1 Mbps at 100 milliwatts can have a range of about 2000 feet; the PLCP header portion of the same packet transmitting at 2 Mbps at 100 milliwatts can have a range between 125 feet and 2000 feet; and the PDU portion of the same packet transmitting at 11 Mbps at 100 milliwatts can have a range of 125 feet. (p. 9, ll. 3-8). Any access point receiving a valid PLCP preamble may remain idle until the entire transmission is complete because the access point will assume that the device transmitting the PLCP preamble is transmitting within their cell. However, the access point may not receive the actual data because the range of the data is much less than the range of the preamble. Thus, if an access point transmits the data portion at 11 Mbps, all other access points within 2000 feet of the access point will remain idle during the full transmission, while only access points within 125 feet of the transmitting access point will be able to receive the data. (p. 9, ll. 8-15). Accordingly, the present invention provides for transmitting the different portions of the data packet at different transmission powers, such that the entire data packet has a more uniform range.

In rejecting the claims of the present invention, the Examiner relies on col. 5, lines 10-16, col. 6, lines 20-50, and col. 8, lines 34-42 of Rom to teach transmitting a first portion of data at a first transmission and a second portion of data at a second transmission. However, col. 5, lines 10-16 of Rom describes a node which includes a transmitter for sending data and a receiver for receiving data. There is no mention or suggestion of transmitting and receiving a *first portion* of data and a *second portion* of data.

Col. 6, lines 20-50 of Rom describes transmitting feedback signals from the receiver to the transmitter of the node. The feedback signal occupies a field in the data packet and the data packet is transmitted from the receiver to the transmitter. The transmitter processor calculates and adjusts a power amplifier based on the feedback signal. Rom further describes

transmitting a data packet from a first node to a second node and transmitting another data packet from the first node to a third node. There is no mention in col. 6, lines 20-50 of Rom of transmitting a *first portion* of data and a *second portion* of data. Rather, Rom describes transmitting *the entire data packet*.

Col. 8, lines 34-42 of Rom describes adjusting the transmission power of a data packet based on received power setting suggestions. Again, no mention or suggestion is made in this section of Rom regarding transmitting *two portions of one data packet* at two different transmission powers. Instead, Rom is transmitting *an entire data packet* and adjusting one transmission power based on received suggestions.

The Examiner contends that identical data packages transmitted at two different power levels are *two different data packages*. The Examiner further contends that the two different data packages can be considered a first data portion and a second data portion. Applicant respectfully disagrees with the Examiner's contentions. The interpretations of the claims do not provide for identical data packages transmitted at two different power levels to be considered a first data portion and a second data portion. For instance, claim 1 recites "the power control module adapted to receive *a data packet having a first portion and a second portion* and transmit the first portion at a first transmission power and the second portion at a second transmission power." Accordingly, claim 1 requires a power control module adapted to transmit one portion of one data packet at a first transmission power and another portion of *the same data packet* at a second transmission power. Similar arguments can be made with respect to independent claims 19, 29, 32, and 35.

Fischer *et al.* does not make up for the aforementioned deficiencies of Rom. Fischer merely explains what a PLCP header and PLCP preamble are and what purpose they play in IEEE standard 802.11. Fischer *et al.* does not teach transmitting the PLCP header at one transmission power and the data portion at a second transmission power. The Examiner contends that "it is obvious that we can combined the method of data transmission of Rom with Fischer data (PLCP), in order to provide different power level for different power of data packet for the purpose of the improving the performance of the wireless system." However, the Examiner failed to set forth particular findings to support this conclusion, which showing must be clear and particular. *C.R. Bard, Inc. v. M3 Systems, Inc.*, 157 F.3d

1340, 48 USPQ2d 1225 (Fed. Cir. 1998). Broad, conclusory statements regarding the teaching of multiple references, standing alone, are not "evidence." *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999) (*citing, McElmurry v. Arkansas Power & Light Co.*, 995 F.2d 1576, 1578, 27 USPQ2d 1129, 1131 (Fed. Cir. 1993)). Moreover, as stated in *Okajima v. Bourdeau*, 261 F.3d 1350, 59 USPQ2d 1795 (Fed. Cir. 2001):

> The level of skill in the art is a prism or lens through which a judge, jury, or the Board of Patent Appeals and Interferences views the prior art and the claimed invention. This reference point prevents these factfinders from using their own insight or, worse yet, hindsight, to gauge obviousness. Skill in the art does not act as a bridge over gaps in substantive presentation of an obviousness case, but instead supplies an important guarantee of objectivity in the process.

It is respectfully submitted that the Examiner has not provided or demonstrated a line of reasoning to show that there is proper motivation to make the suggested combination. Rom is directed to a method and apparatus for implementing a protocol for controlling transmitter power in a wireless LAN; while Fischer *et al.* is directed to an apparatus for ensuring that creating the necessary control signaling of multiple implementations of the power ramp operation of a radio transmitter. Neither Rom nor Fischer *et al.* discloses, teaches, or suggests transmitting different portions of a data packet at different power levels. Accordingly, it appears that the purported combination of references is based on improper hindsight, in which the present application provides the teaching and motivation.

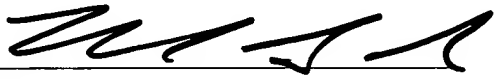
Because neither Rom nor Fischer *et al.*, alone or in combination, teach or suggest each and every element as set forth in claims 1, 19, 29, 32, and 35, the combination of Rom and Fischer *et al.* do not make obvious such claims. Accordingly, a reversal of this rejection is respectfully requested.

IX. Conclusion

For at least the above reasons, the claims currently under consideration are believed to be patentable over the cited references. Accordingly, it is respectfully requested that the rejections of claims 1-2, 4-21, and 23-35 be reversed.

Claims 3 and 22 were indicated by the Examiner as allowable subject to being amended to independent form. Applicant reserves the right to cast such claims in independent form at a later date.

Respectfully submitted,
AMIN & TUROCY, LLP



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X. Appendix of Claims (37 C.F.R. § 1.192(c)(9))

1. A communication unit in a cellular communication system, the unit comprising:

a transmitter adapted to transmit data over an RF link; and

a power control module coupled to the transmitter, the power control module adapted to receive a data packet having a first portion and a second portion and transmit the first portion at a first transmission power and the second portion at a second transmission power.

2. The unit of claim 1, wherein the communication unit transmits the first portion of the data packet at a first data rate and the second portion of the data packet at a second data rate.

3. The unit of claim 2, wherein the first transmission power and the second transmission power are selected so that the first portions and the second portion have similar transmission ranges.

4. The unit of claim 1, wherein the data packet includes a third portion and the power adjustment module is adapted to receive the data packet having the third portion and transmit the third portion at a third transmission power.

5. The unit of claim 4, wherein the communication unit transmits the first portion of the data packet at a first data rate, the second portion of the data packet at a second data rate and the third portion of the data packet at a third data rate.

6. The unit of claim 5, wherein the data packet conforms to the IEEE 802.11 standard protocol and the first portion of the data packet is a PLCP preamble, the second portion of the data packet is a PLCP header and the third portion of the data packet is a data portion.

7. The unit of claim 1, wherein the communication unit is an access point system.

8. The unit of claim 1, wherein the communication unit is a mobile communication unit.

9. The unit of claim 1, wherein the power control module includes a transmission power amplifier adapted to receive the power data packet and dynamically control the transmission power of the first portion and the second portions.

10. The unit of claim 9, wherein the power control module includes a D/A converter adapted to receive power data information in digital format and convert the power data information to an analog control signal, the analog signal adapted to control the transmission power of the transmission power amplifier.

11. The unit of claim 10, further including a processor coupled to the D/A converter, the processor adapted to transmit the power data information to the D/A converter.

12. The unit of claim 11, further including a receiver coupled to the processor, the receiver being adapted to receive a transmission from other communication units.

13. The unit of claim 12, wherein the receiver is further adapted to provide transmission power information to the processor from a transmission communication unit transmitting information to the receiver, the processor evaluating a range from the transmission power information and downloading power data information to the power control circuit based on a desired transmission range of the data packet.

14. The unit of claim 10, wherein the power control module includes a power data register section coupled to the D/A converter, the power data register module being adapted to store the power data information and provide the power data information to he D/A

converter.

15. The unit of claim 14, further including a processor coupled to the power data register section, the processor adapted to transmit the power data information to the power data register section.

16. The unit of claim 15, further including a receiver coupled to the processor, the receiver being adapted to receive a transmission from other communication units.

17. The unit of claim 16, wherein the receiver is further adapted to provide transmission power information to the processor from a transmission communication unit transmitting information to the receiver, the processor evaluating a range from the transmission power information and downloading power data information to the power control circuit based on a desired transmission range of the data packet.

18. The unit of claim 1, wherein the communication unit is coupled to a network and the network provides the power control circuit with information relating to the power transmission level of the first portion and the second portion.

19. A method of transmitting a data packet in a cellular communication system, comprising the steps of:

transmitting a first portion of the data packet at a first transmission power level; and

transmitting a second portion of the data packet at a second transmission power level.

20. The method of claim 19, further including the step of transmitting a third portions of the data packet at a third transmission power level.

21. The method of claim 19, wherein the first portion of the data packet is transmitted at a first data rate and the second portion of the data packet is transmitted at a second data rate.

22. The method of claim 19, wherein the first power level and the second power level are adjusted so that the first portion and the second portion have essentially the same transmission range.

23. The method of claim 19, wherein a step of providing a communication unit precedes the step of transmitting a first portion of the data packet at a first transmission power level, the communication unit including a transmitter, a power control module coupled to the transmitter, a processor coupled to the power control module and a receiver coupled to the processor.

24. The method of claim 23, wherein the processor provides the power control module with the first transmission power and the second transmission power after the step of providing a communication unit and prior to the step of transmitting a first portion of the data packet at a first transmission power level.

25. The method of claim 24, wherein the processor evaluates the first transmission power and the second transmission power based on a desired transmission range for the first portion and the second portion of the data packet.

26. The method of claim 25, wherein the processor evaluates the first transmission power and the second transmission power based on a desired transmission range for the first portion and the second portion of the data packet based on a transmission power level of a transmission received from another mobile communication unit.

27. The method of claim 25, wherein the communication unit is coupled to a network and the processor evaluates the first transmission power and the second transmission power based on a desired transmission range for the first portion and the second portion of the data packet, the network providing the processor information relating to the desired transmission range.

28. The method of claim 19, wherein the power level of the first portion and the second portion is dynamically adjusted during the transmission of the data packet.

29. An access point system in a cellular communication system utilizing an IEEE 802.11 standard protocol, comprising:

a transmitter adapted to transmit data over an RF link;

a power control module coupled to the transmitter, the power control module adapted to receive a data packet having a PLCP preamble and PLCP header portion and a data portion and dynamically adjust the transmission power of the packet during transmission of the packet, such that the PLCP preamble portion begins transmitting at a first transmission power level and the data portion begins transmitting at a second transmission power level;

a processor coupled to the power adjustment module, the processor being adapted to provide power adjustment information to the power control module; and

a receiver coupled to the processor, the receiver adapted to receive data over an RF link wherein the access point system is coupled to a network.

30. The system of claim 29, wherein the power control module includes a transmission power amplifier adapted to receive the data packet and control the transmission power of the PLCP preamble portion and the data portion, the transmission power amplifier coupled to a D/A converter, the D/A converter being adapted to receive power data information in digital format and convert the power data information to an analog control signal, the analog control signal adapted to control the transmission power of the transmission power amplifier.

31. The system of claim 30, wherein the power control module include a power data register module coupled to the D/A converter, the power data register module being adapted to store the power data information and provide the power data information to the D/A converter wherein the processor is coupled to the D/A converter, the processor adapted to transmit the power data information to the D/A converter.

32. A cellular communication system, comprising:

means for transmitting a data packet having a first portion and a second portion; and

means for dynamically adjusting the transmission power level of the first portion with respect to the second portion of the data packet coupled to the means for transmitting a data packet having a first portion and a second portion.

33. The system of claim 32, further including means for determining the transmission power levels of the first and the second portion based on a desired transmission range for both the first and the second portion.

34. The system of claim 32, wherein the means for dynamically adjusting the transmission power level of the first portion with respect to the second portion of the data packet further provides for adjusting the power transmission level of a third portion of the data packet with respect to the first and second portions.

35. A signal transmitted over a wireless communication system, the signal comprising:

a data packet having a first portion transmitted at a first power level and a second portion transmitted at a second power level.